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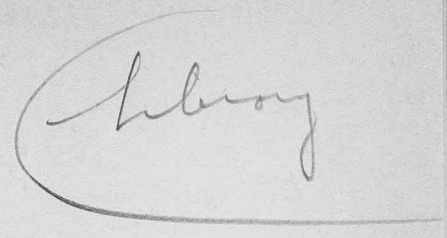

The Maryland Fruit Grower

October, 1934

Maryland State
Horticultural Society

The Maryland Fruit Grower

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APPLE STORAGE

Correct apple storage temperatures are determined by the time at which they are to be marketed. A recent summary in "Wisconsin Horticulture" (September 1934) adapted from U. S. Department of Agriculture Circular 287, "Commercial Storage of Fruits and Vegetables", states that apples soften twice as rapidly at 70° as at 50° F., twice as rapidly at 50° as at 40°, and about twice as rapidly at 40° as at 32°. The figures given below show about how much time is required for the varieties listed below (as given in regions to which they are best adapted) to reach full eating-soft condition when picked at proper maturity and stored immediately at 32° F. For best commercial use, it is better to remove the fruit from storage for sale about two weeks to a month less than the figures show.

Variety	*Months*
McIntosh	2 to 4
Grimes	2 to 4
Jonathan	3 to 4
Northern Spy	4 to 6
Ben Davis	5 to 6
Delicious	5 to 6
Stayman	6 to 7
Winesap	7 to 8

RESULTS OF CERTAIN PACKING METHODS IN BARRELED APPLES

Although the barrel pack may be displaced slowly, the export market still uses barrels. An interesting paper written by Messrs. Harding, Rose, and Lutz of the U. S. Department of Agriculture is found in the 1933 Proceedings of the American Society for Horticultural Science.

"Barreled apples from the United States often reach European markets in unsatisfactory condition. Slackness of pack is probably the most serious defect. Reports of 4 to 6 inches of slackness are not infrequent and barrels arriving at European markets only a little over half-full have on rare occasions been observed. According to the Bureau of Agricultural Economics of the United States Department of Agriculture, 19 per cent of the United States barreled apples sold at the Liverpool auction in 1932-1933 were slack. In the previous season 25 per cent of the barrels were graded and sold at Liverpool as slacks. The loss at Liverpool (to American shippers) for barreled apples arriving slack was estimated at $109,000 for 1931-1932. This represents but one European market and similar conditions prevailed in others.

"Since most of the fruit arriving at Liverpool, Southampton, etc., is reshipped to various parts of the United Kingdom without refrigeration, it must

arrive at the port in good condition and also withstand reshipment.

Methods

"During the 1931 shipping season an overseas transportation test was made to ascertain the influence of methods of packing barreled apples, particularly the amount of racking and the height of pack, on the condition of the fruit on arrival in England.

"The investigations were continued in 1932 and were outlined specially to determine the effect of various amounts of 'shaking' and 'racking' on the condition of the fruit.

"The fruit used in 1932 was all of the Rome Beauty variety, grown and packed at Hancock, Maryland. An attempt was made to duplicate export shipments of fruit, the packed barrels being shipped by rail to Arlington Farm, Virginia, and placed October 25 under storage conditions, similar to refrigerated and ordinary storage aboard ship. At the end of 1 month of storage, all the fruit was inspected and notes were taken on the amount of decay, bruising, visible skin breaks and slackness of pack.

" 'Shaking' means the settling of the fruit in the barrels by giving the barrel three or four quick sharp jolts. The amount of shaking varied from the check treatment which received none, to certain lots which received as many as five shakings at intervals during the filling of the barrels. In the latter treatment, the barrel was shaken when 1/6 full, 1/3 full, 1/2 full, and 5/6 full.

" 'Racking' means a vigorous tipping back and forth of the barrel when it was nearly full, with the 'plug' or 'follower' in place. During such racking the barrel was inclined enough from vertical so that the chime on one side was raised 3 or 4 inches off the floor. The number of times the barrel was racked refers to the number of complete backward and forward motions. Thus, if a barrel was racked 15 times, it was jolted 30 times.

"Standard barrels of 3-bushel capacity were used and for all the treatments (1932) were filled with apples to a height of 3/4 inch above the staves. In 1932 four series of barrels were prepared, as follows:

"Series A:—Barrels shaken and racked; 20 barrels of apples size 2¼ to 2½ inches, 20 barrels size 2½ to 3 inches. Two barrels of each size were subjected to each treatment; treatments varied from no shaking to shaking five times during the filling process. All were racked 15 times. Series B:—Barrels shaken but not racked; 20 barrels of apples size 2¼ to 2½ inches. Series C:—Barrels headed with a screw press; 8 barrels with combination treatment of shaking and racking. Series D:—Barrels shaken on a wooden floor; 8 barrels with combination treatment of shaking and racking.

"The barrels of series A, B and D were headed with a machine press. Those of series A, B and C were racked on a concrete floor. Series D was racked on a wooden floor.

"Duplicate lots of each treatment were stored for 1 month in ordinary storage, in which the fruit temperatures ranged from 52 to 68 degrees F with an average of 60 degrees, and in a cold storage room maintained at about the temperature conditions usually found in refrigerated chambers for apples aboard ship. Fruit temperatures in the cold storage room varied but slightly from 36 degrees.

"The method adopted for the classification of bruised and 'broken skin' apples was similar to that used in the 1931 export test. Apples were con-

sidered badly bruised if they had one or more flattened surfaces 1 inch or more in diameter, or four or five somewhat smaller. Apples with two to four small bruised spots were classed as slightly bruised. 'Broken skin' refers to apples with visible skin breaks; these in turn were further classified as to the severity of the bruise.

"All barrels were opened at the 'tail' end and each quarter-barrel of apples was inspected and classified separately. Most of the bad bruising was found in the top quarter (tail end) of the barrel.

Summary Results and Conclusions

"Although these investigations are still in progress, the following tentative conclusions have been reached as a result of the work carried on in 1931 and in 1932.

"1. Insufficient filling or racking was responsible for an inch or less of slackness of experimental shipments in which decay and breakdown were not important factors. Barrels of York Imperial apples which were filled only to the tops of the staves of the barrel and had been slightly racked arrived at London showing only an inch of slackness in the barrel. The same degree of slackness was found in barrels which were well shaken and racked but filled only to the top of the croze (the groove below the tops of the staves).

"2. The height of pack and amount of racking may have a very pronounced indirect effect on the degree of slackness by influencing the amount of bruising and skin breaks. The latter are especially serious since they open the way for the entrance of pathogenic organisms which cause decay and thus slackness. Shaking the barrels two or three times while they are being filled, racking 15 times when the barrels are nearly full with the 'plug' or 'follower' in place and then filling to about ¾ inch above the tops of the staves seems sufficient to prevent appreciable settling of the apples in transit. Racking with the plug or follower in place in very effective in settling the apples in the barrel and thus preventing slackness due to subsequent settling, although some shaking also is necessary. If heavier shaking or racking is practiced it is well to decrease the height of the pack to prevent excessive bruising and skin breaks. Filling more than ¾ inch above the tops of the staves causes an undue amount of bruising and skin breaks, especially when normal shaking and racking have been given. Over-filling does not replace adequate shaking and racking in the prevention of slackness.

"3. Refrigeration during the ocean transit period is effective in the prevention of slackness in varieties such as Jonathan or Grimes Golden as these are especially subject to decay and breakdown and are generally shipped when the outside air temperature is high. Refrigeration is generally not necessary for varieties such as York Imperial which are shipped during a colder season of the year.

"4. Barrels headed with a machine press which applies the pressure directly downwards contained somewhat fewer fruits with broken skins and bad bruises than did similar barrels headed with a hand-operated screw press.

"5. Barrels racked on a concrete base were somewhat more tightly packed than those racked on a wooden floor. The effects on bruising and decay were similar.

"6. The average number of apples (size 2¼ to 2½) increased progressively from 718 in barrels not shaken to 761 in barrels shaken five times, when the amount of racking was constant. Barrels racked 15 times contained an

average of 738 apples per barrel, while those not racked contained 722, when the amount of shaking was the same.

"7. Slightly less bruising occurred in barrels which were 'ring-tailed' than in those which were 'jumble-filled'."

SOMETHING NEW

Virginia growers, through their Horticultural Society, are sending Mr. W. S. Campfield on a trip through parts of South Carolina, Georgia, Alabama, Mississippi, Tennessee and then through parts of either the Middle West or New England, to tell those people about the merits of apples; especially Virginia apples. This is a form of direct, useful and forceful advertising, and should bring results.

The Washburn-Crosby "Gold Medal" Flour manufacturers are also running a full page colored ad in six of the larger magazines (September and October) giving several recipes for using apples, especially in making apple pie with cheese crust. These magazines have over 10 million circulation, and there will also be a "Betty Crocker" radio program (date not given) reaching about 3 million housewives, telling them how to use apples. Look for this ad in the October issues of "County Gentlemen", "Women's World", "Pictorial Review", "Farmer's Wife", "Ladies Home Journal" and "Good Housekeeping".

LOOKING AROUND

About this time of the year, there's a lot to see if we know where to look for it. Most people are looking ahead. Some folks are like the goofus bird that flies backward. It doesn't care where it is going, but likes to see where it has been. The fruit grower is now looking both forward and backward. He is planning the things to be done now or later; and is interested in the future of the industry, etc. At the present time, there is a lot to be learned from the cull pile. Is it about right, or too large. What were the main causes of cull apples? How were the commercial and utility grades? Would better thinning or a little more detailed pruning help bring up size or color? Was our spraying program well done, or did we slip up on time or materials?

Every grower should look over the orchard, too, so that he can see how the trees carry the crop. Here he will get more information about his orchard operations. Are the trees of certain varieties too thick? How about size and color? Is codling moth worse in some blocks? Is blotch increasing? Bitter rot may be creeping up on us. If so, that means plans to clean up all rotted fruit in the infected areas. What about scale? Are mice doing any damage? Why not mark weak trees to be removed? Maybe these details can not be handled by one man, but the pickers or orchard foreman can make observations as they are harvesting the crop.

Ants are supposed to be the hardest working creatures in the world, and yet they seem to attend all picnics.

RIPENING TEMPERATURE OF KIEFFER PEARS

Someone has said that the way to harvest Kieffer pears is to shoot them off the trees with a shotgun, rake them up with a hay rake and shovel them into barrels. The Kieffer pear, however, has many virtues if properly ripened. Messrs. Lutz, Culpepper and Moon, of the U. S. Department of Agriculture have reported in the 1933 Proceedings of the American Society for Horticultural Science, that this pear can really be storage ripened at 60° to 65° Fahrenheit, and can develop very good texture and flavor. The report follows:

"In spite of its reputed poor quality, the Kieffer pear is grown extensively in the eastern and southern States, largely because of its productiveness and blight resistance. Experimental work was started in 1932 in an attempt to determine the factors which might improve the quality of this fruit.

Materials and General Methods

"The fruit used in 1932 consisted of five pickings made at Beltsville, Maryland, at approximately 10-day intervals, the first being made on September 16 and the last on October 25. In 1933, four pickings were made at approximately 10-day intervals on fruit grown at Arlington Farm, Virginia. In addition fruit was secured from State College, Mississippi; South Haven, Michigan; Lockport, New York; College Park, Maryland and Beltsville, Maryland. The first picking at Arlington Farm was made on August 18 and the last on September 21.

"All pickings were subjected to ripening temperatures of 60, 70, and 80 degrees F and lots from nearly all were ripened at 50 degrees. In addition, 32, 40, 65, 90, and 100 degrees were used with several lots. Firmness was determined, at intervals during the ripening period, by means of a pressure tester using a plunger 5/16 inch in diameter.

Results

"*Influence of time of harvesting*:—The time of harvesting seemed to have little influence on the quality of the Beltsville fruit in 1932, although the fruit of the first picking was not quite equal to that of subsequent pickings. In 1933, the intermediate pickings of Arlington fruit were of somewhat higher quality than either the first or last pickings.

"*Influence of temperature on rate of softening*:—In pears grown at Beltsville, which were harvested September 25, 1933, it is clear that the most rapid softening occurred at 65 degrees F, followed closely by 60 degrees. The rate of softening decreased as the temperature varied above or below 65 degrees.

"In firmness of the New York grown pears as influenced by temperature, the most rapid softening was at 60 degrees F. No trial at 65 degrees was made with this fruit.

"*Influence of ripening temperature on quality*:—The quality attained by Kieffer pears seemed to be determined largely by the temperature at which they were ripened. This variety ripened at 60 degrees F to a pressure test of 3 to 4 pounds was nearly always of considerably better quality in both texture and flavor than is usually considered possible. Pears ripened at 65 degrees were equal or nearly equal to those ripened at 60 degrees F. Kieffer pears ripened at 70 degrees were about equal in quality to that ordinarily expected of this variety and were always markedly inferior in texture and flavor to fruit ripen-

ed at 60 degrees. The development of flavor decreased progressively as the temperature was increased above 65 degrees or decreased below 60 degrees. Although 80 degrees was more effective in changing the green color of the fruit to yellow, pears ripened at this temperatures were so tough and woody that they were practically inedible. Fruit held at 50 degrees often failed to ripen properly, frequently breaking down before becoming sufficiently soft. The relationship of temperature to the quality attained by Kieffer pears was similar in both fresh and canned fruit. Prolonged cooking not only failed to materially soften fruit which had failed to soften properly at ripening-room temperatures which were too high, but also imparted an undesirable pink discoloration to the fruit.

"While Kieffer pears ripened at 60 degrees F generally were not equal in quality to Bartlett pears they were not greatly inferior.

"Another advantage in ripening Kieffer pears at 60 agrees F is that this temperature is much less conducive to development of decay than 70 or 80 degrees."

POISON IVY AND HONEYSUCKLE

These pests have developed in some Maryland orchards, and like most things of this sort, the best control is to be had while the vines are young and before they become well established. About the best method of controlling these plants is to dig them out, or at least dig at them each year until they are killed out. This is a good chore for late fall. Some growers have tried various weed killers, and crank case oil sprays, but with little success. One of the best jobs of eradication observed this year, was in an orchard where the ivy was disked thoroughly and the plants dug out with potato forks. Ivy and honeysuckle use soil moisture, and fertility and complicate picking and the removal of drop fruit. Don't let them get started in your orchard.

WINTER INJURY IN NEW YORK

In a preliminary report, the New York State Department of Agriculture and Markets have given the estimated damage to fruit trees and vines in New York from the severe winter of 1933-34. But a brief summary will be attempted:

Fifty-seven counties reported. Terms used—"commercial", over 100 trees; "non-commercial", under 100 trees; "bearing", over 8 years old; "non-bering", 8 years and under; "injured" damaged, but will probably recover; "percent" indicates the percent of total trees of that class killed or injured.

Apples:—Commercial—*bearing,* killed 1,016,000 (16.6%); injured 1,598,000 (26.1%), *non-bearing,* killed 74,000 (3.7%); injured, 251,000 (12.4%).

Non commercial—*bearing;* killed 1,361,000 (17.4%); injured 2,054,000 (26.3%); *non-bearing,* killed 97,000 (4.4%); injured 281,000 (12.7%). An estimate of killed trees, by variety, these trees being commercial trees of bearing age, is as follows: Baldwin 452,000; Greening 89,000; McIntosh 13,000; Wealthy 8,000; (Northern) Spy 21,000; Ben Davis 19,000 (Tompkins) King 23,000; Oldenburg (Duchess) 8,000; Twenty Ounce 4,000.

Grapes suffered considerably, but Concord showed less injury than

Catawba, Niagara and Delaware. About 3,512,000 bearing vines (9.4%) were killed and 11,247,000 (30.2%) were injured, while 79,000 non-bearing vines (6.5%) were killed and 178,000 (14.7%) vines were injured in the 57 countries reporting.

Peaches suffered considerably, as 621,000 bearing trees (36.8%) were killed and 553,000 bearing trees (32.8%) were injured, and 114,000 non-bearing trees (14.5%) were killed and 162,000 (20.6%) were injured.

Pear trees of bearing age showed a killing of 8.9%, and injury to 20.9% of total trees and 5.9% non-bearing trees were killed and 14.5% of the trees were injured.

About 7% of the bearing sour cherries, and 18% of the bearing sweet cherry trees were killed. The non-bearing sweet cherry trees suffered almost as badly in injury.

Bearing plum and prune trees sugered 11% killed, and bearing quinces had 28.9% of the trees killed.

These figures are significant, though only approximate, for they show severe loss and a possible change for a few years, in the apple industry, for New York State is the second largest fruit-growing state. The figures of winter-killing of trees in the New England States and other Eastern and Midwestern States are likely as serious as those of New York.

It is believed that not more than 1,000 peach trees were killed by the freeze in Maryland. Cherries were killed back some, but not seriously.

NEW VARIETIES AND RED BUD SPORTS

Recently a grower was walking through an Elberta peach block. He passed a limb near whose end hung a ripe, well-colored peach, but it was a little over a month before ripening time. He picked the peach thinking that it was wormy or a split pit, and continued his walk through the orchard. Upon close examination, later, the peach was found to be perfect. It might have been a bud sport, who knows? The grower could not find the limb to mark it for observation, next year. Maybe a good bud sport was lost, or maybe not. We could use a peach variety like that one.

In the September, 1934, "American Fruit Grower", Dr. M. J. Dorsey of Illinois writes regarding the discovery and general precautions to be followed in selecting bud sports. Above all things a new sport should be thoroughly tried out before it goes to a nursery.

In some respects it is unfortunate that so many bud sports of certain varieties have been discovered. They are a little confusing to the growers, who naturally want to plant the best one. They give the nurserymen a lot of sleepless nights, and they give a headache to research and extension men who are supposed to be able to recommend this or that sport as the best. In the case of practically all of these sports, not a lot regarding adaptability or production, etc., can be said as yet, since the trees are young and have borne but few fruits.

Mr. S. P. Hollister, speaking before the Connecticut Pomological Society in December, 1933, stated that we were beginning to see red. He quoted Mr. John Bregger's article in "Better Fruit", where up to 1911, but eight color sports were reported. By 1921, four more were added; by 1931, there were 143, and by 1932 there were 202 color sports from 30 varieties of apples. Now

we have 263 sports. This only shows that there are great possibilities of better color, and also shape, season and size of some of our present good varieties.

There is some confusion in the names of those sports now offered for sale. We have the old Delicious, and also the newer sports such as Richared, Starking, Red Delicious, Double Red Delicious, Richard Delicious, Ready Red, Redwin, etc., and we have Rome, Red Rome, Gallia Beauty, etc. There seems but little to do but plant the variety that looks good or to be patient until more is known of the comparative values of the various varieties.

APPLE JUICE CONCENTRATE

A recent article in "Industrial and Engineering Chemistry" describes the results of some work done by D. C. Carpenter and E. C. Smith of New York Agricultural Experiment Station, Geneva, N. Y., in which the esters or volatile oils in apple juice have been made into a concentrate which may be added to carbonated or plain water, making a very palatable apple cider.

NEW BULLETINS

A few new bulletins from other states may be of interest to Maryland growers. If interested a post card will bring them to you free of charge.

Removal of Lead and Arsenic Spray Residues from New York Apples. W. T. Pentzer. (N. Y. Cornell Sta. Bul. 604. 1934.) Ithaca.

Control of Rodents in the Orchard. T. J. Talbert. (Mo. Sta. Circ. 178. 1934.) Columbia.

The New Jersey Standard for Judging the Growth Status of the Delicious Apple. M. A. Blake and O. W. Davidson. (N. J. Sta. Bul. 1934.) New Brunswick.

Effects of Temperature on the Growth and Composition of Stayman and Baldwin Apple Trees. G. T. Nighingale and M. A. Blake. (N. J. Sta. Bul. 566. 1934.) New Brunswick.

A Control for the Raspberry Crown Borer. J. H. Clark. (N. J. Sta. Circ. 304. 1934.) New Brunswick.

Fruits for Roadside Markets. C. H. Howe et al. (N. Y. Sta. Circ. 144. 1934.) Geneva.

How Much Nitrogen do Apple Trees Need? R. H. Roberts. (Wis. Sta. Bul. 427. 1934.) Madison.

Asparagus Yields as Affected by Severity of Cutting. E. P. Lewis. (Ill. Sta. Circ. 401. 1934.) Urbana.

Strawberry Growing in Missouri. T. J. Talbert. (Mo. Sta. Circ. 176. 1934.) Columbia.

Insulated Common Storage for Apples. E. R. Gross. (N. J. Sta. Circ. 301. 1934.) New Brunswick.

Factors Influencing the Occurrence of Potato Scab in New York. F. M. Blodgett and F. B. Howe. (N. Y. Cornell Sta. Bul. 581. 1934.) Ithaca.

Sign on a basket of peaches in a roadside market: "Don't squeeze me until I'm yours".

Teacher: "Can anyone tell me where Detroit is?"
Willie: "Please, teacher, they are playing in St. Louis."

HAVE YOU READ THE ADVERTISEMENTS?

Fertilize
YOUR APPLE TREES THIS FALL!

USE

AERO CYANAMID

THE *Superior* FRUIT FERTILIZER

[Carefully-conducted tests show that Aero Cyanamid applied to apples peaches and small fruits in the Fall gives results equally as good as when applied in the spring]

EASE OF APPLICATION AND ECONOMY OF TIME FAVOR FALL APPLICATION

It is easier to get about over the orchard in the fall than during early spring when the soil is thawing out. Spring is also a very busy season, and it is a great convenience to have gotten the task of applying the fertilizer out of the way of other spring work.

AMERICAN
CYANAMID COMPANY
Manufacturers of
'Aero' Cyanamid and 'Ammo-Phos'
30 Rockefeller Plaza New York, N. Y.

GC Aero Cyanamid GRANULAR 22% NITROGEN 70% HYDRATED LIME

Cyanamid is NITROGEN plus LIME

Plan to Spray this Fall

1. If your orchard is in a run-down condition.

Plan to spray this Fall!
Your trees need Scalecide. No spray will build them up into health, vigor and productiveness like an application of Scalecide this Fall. Last year Scalecide sprayed trees resisted the cold winter better—the same varieties in adjoining rows.

2. If you have too much codling moth.

Plan to spray this Fall!
Scalecide is the only spray which kills as much as 50% over-wintering codling moth. This spray with Scalecide also kills scale and other pests too.

3. If you plan to use tar oils for aphis eggs.

Plan to spray this Fall!
The Virginia Experiment Station urges growers to get this application on as soon as the foliage is off. Use Pratt's Tar-o-wash or Straitar for this purpose. Straitar combined with Scalecide is the finest tar oil combination known.

PRATT'S OIL SPRAYS

SCALECIDE. For thirty years the one dependable dormant oil spray. Given a difficult job to do, Scalecide does it better than any spray which has ever been made.

TAR-O-WASH. The latest word in tar oil sprays which have been developed by the experiment stations for the control of aphis eggs in the dormant season. May be had in 50% tar and 33% lubricating oil, or 33% tar and 47% lubricating oil.

STRAITAR. An 85% emulsion of pure coal tar creosote oil of highest quality. Being so highly concentrated only 3 to 3½ gallons needed for severe cases of aphis and oyster shell and scurfy scale. Mixes with Scalecide or any good lubricating oil emulsion.

SPRA-CREAM. A beautiful smooth emulsion containing 83 to 85% highly refined lubricating oil, especially selected for high scale kill. Combines with lime sulfur or any Pratt's Tar Oils.

PRATT'S OIL SPRAYS ARE SAFE OIL SPRAYS

Write for lowest quantity prices allowable under NRA code.

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